

WHAT IS CLAIMED IS:

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1. A combination oil separator and filter device for a refrigerant recovery apparatus, the device comprising

(a) a canister means having a first chamber portion for separating oil from refrigerant, and a second chamber portion for filtering the refrigerant.

(b) an inlet means through which refrigerant can be introduced into the first chamber portion,

(c) an oil outlet means for conducting oil from the first chamber portion,

(d) a filter cartridge placeable in the second chamber portion and,

(e) a refrigerant outlet means through which refrigerant can be withdrawn from the second chamber portion.

2. The invention of claim 1 further comprising a screen means disposed in the path of refrigerant flow between the first chamber portion and the second chamber portion.

3. The invention of claim 2 wherein the screen means comprises about a B100 mesh screen.

4. The invention of claim 1 wherein the filter cartridge includes an upstream surface, a downstream surface and a seal means disposed on a surface of the filter

cartridge between the upstream surface and the downstream surface to force the refrigerant to flow through the filter cartridge.

5. The invention of claim 1 further comprising a user actuatable purge means for permitting the user to remove collected oil and air from the first chamber portion.

6. The invention of claim 1 wherein the canister means includes a removable cap means for permitting ingress to the second chamber portion to permit removal and replacement of the filter cartridge.

7. The invention of claim 1 further comprising a refrigerant hose connector means for connecting a downstream end of a low side refrigerant hose and a downstream end of a high side refrigerant hose to the inlet means, and an extended capillary tube means extending between the downstream end of the high side refrigerant hose and the inlet means.

8. The invention of claim 7 wherein the connector means includes a first fitting member to which the downstream end of the high side refrigerant hose is coupled, a second fitting member to which the low side refrigerant hose is coupled, and wherein the capillary tube mean extends between the first fitting means and the second fitting means.

Claims 7-9

8 g. The invention of claim ⁷ 8 further comprising a third fitting member coupled to the inlet means, and blockage means for preventing the flow of refrigerant between the first fitting member and third fitting member except through the capillary tube means.

10. A refrigerant recovery device comprising
a compressor,
an oil separator disposed downstream from the compressor,
an oil return line means having a first end disposed downstream from the oil separator means and a second end disposed upstream from the compressor means,
a valve means for controlling the flow of material in the oil return line means,
and
means for controlling the opening and closing of the valve means for permitting the controlled flow of materials in the oil return line means between the oil separator means and the compressor means during operation of the device to ensure an adequate replenishment of a supply of oil in the compressor, and for biasing the valve in an open position when the device is not operating to permit refrigerant to flow therethrough to substantially balance the pressure upstream from the compressor with the pressure downstream from the compressor.

11. The invention of claim ⁹ 10 wherein the valve means comprises a solenoid valve means.

¹¹₁₂. The invention of claim ⁹₁₀²⁸ wherein the solenoid valve means is closed normally during the operation of the device, opening only at predetermined intervals to permit oil to flow through the oil return line means to allow replenishment of the oil in the compressor means.

¹²₁₃. The invention of claim ⁹₁₀ wherein the oil separator comprises a second oil separator, further comprising a first oil separator disposed upstream from the compressor for separating oil from recovered refrigerant.

¹³₁₄. The invention of claim ¹²₁₃ further comprising a filter means disposed downstream from the first oil separator, a condenser means disposed downstream from the second oil separator, and a storage tank disposed downstream from the condenser means.

¹⁴₁₅. A single pass refrigerant recovery device for recovering refrigerant from a refrigeration system comprising

P) (a) at least one refrigerant hose for withdrawing refrigerant from the refrigeration system,

P) (b) a first oil separator means for separating oil from recovered refrigerant, the first oil separator means being disposed downstream from the at least one refrigerant hose,

P) (c) a filter means disposed downstream from the oil separator means, the first

oil separator means and the filter means being housed within a unitary canister means,

P1 (d) a compressor means disposed downstream from the filter means,

L (e) a second oil separator means disposed downstream from the compressor means,

P1 (f) a condenser means disposed downstream from the second oil separator means,

P1 (g) a moisture indicator means disposed downstream from the condenser means,

L (h) a storage tank means disposed downstream from the moisture indicator means,

P1 (i) an oil return line means having a first end disposed downstream of the second oil separator means and a second end disposed upstream of the compressor means,

P1 (j) a valve means for controlling the flow of material in the oil return line means, and

P1 (k) means for controlling the opening and closing of the valve means for permitting the controlled flow of materials in the oil return line means between the oil separator means and the compressor means during operation of the device to ensure an adequate replenishment of a supply of oil in the compressor, and for biasing the valve in an open position when the device is not operating to permit refrigerant to flow therethrough to substantially balance the pressure upstream from the compressor with the pressure downstream from the compressor.

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~~16~~. The invention of claim ¹⁴~~15~~ wherein the valve means comprises a solenoid valve means, and the means for controlling the opening and closing of the valve means comprises a timer means.

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~~17~~. The invention of claim ¹⁵~~16~~ wherein the timer means causes the opening of the solenoid valve means at predetermined intervals to permit materials to flow in the oil return line means between the second oil separator means and the compressor means.
